



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

STANDARD SPECIFICATIONS FOR PRESSURE WATER FILTERS¹

RATES OF FILTRATION

Rates of filtration are based upon the "Report of Committee on Recommended Standardization of Filters" of the American Society of Mechanical Engineers, presented at the annual meeting of the A.S.M.E. December, 1916. This report fixes the rate of filtration for potable water as follows:

"Whenever the water is to be used for domestic purposes or to secure full bacterial purification, the capacity shall be based on a rate of filtration not to exceed 2 gals. per minute per square foot of filtering area and a coagulant must be used."

A full report of the committee is contained in Transactions of A.S.M.E. for 1917, pages 425-432.

Rates of filtration for various uses should conform to the following schedule:

2 gals. per sq. ft. per minute for all supplies used for drinking, or for the preparation of food products.

2 to 4 gals. per sq. ft. per minute when filtering a treated municipal supply of approved bacterial purity.

2 to 4 gals. per sq. ft. per minute for swimming pools, and for all industrial uses.

2 to 5 gals. per sq. ft. per minute as conditions may warrant for double filtration, using sand followed by charcoal where reduction of color, odor, taste or certain forms of iron is desired. This method of filtration not to be applied for bacterial purification.

¹ Adopted by Associated Manufacturers of Water Purifying Equipment.

Capacities of filters for rates of 2, 3 and 4 gallons per square foot per minute

DIAMETER	LENGTH	AREA	CAPACITIES PER MIN.			PIPE CONNECTIONS		MIN. WASH WATER AT 12 GALS. PER SQ. FT. PER MIN.	
			2 gals. per sq. ft.	3 gals. per sq. ft.	4 gals. per sq. ft.	Inlet outlet filter wash	Waste to sewer		
Vertical filters									
ft.	in.	ft.	sq. ft.	gals.	gals.	gals.	in.	in.	gals.
1	0		0.785	1.57	2.35	3.14	$\frac{3}{4}$	1	9.42
1	2		1.06	2.12	3.18	4.24	1	1 $\frac{1}{4}$	12.72
1	4		1.39	2.78	4.17	5.56	1	1 $\frac{1}{4}$	16.68
1	8		2.18	4.36	6.54	8.72	1 $\frac{1}{4}$	1 $\frac{1}{2}$	26.16
2	0		3.14	6.28	9.42	12.5	1 $\frac{1}{2}$	2	37
2	6		4.90	9.8	14.7	19.6	1 $\frac{1}{2}$	2	60
3	0		7.06	14.1	21.1	28.2	2	2 $\frac{1}{2}$	84
3	6		9.62	19.2	28.8	38.5	2	2 $\frac{1}{2}$	115
4	0		12.56	25.1	37.6	50.2	2 $\frac{1}{2}$	3	150
4	6		15.90	31.8	47.7	63.6	2 $\frac{1}{2}$	3	190
5	0		19.63	39.2	58.8	78.5	3	4	235
6	0		28.27	56.5	84.8	113.1	4	5	339
7	0		38.48	76.9	115.4	153.9	4	5	460
8	0		50.27	100.5	150.8	201.1	5	6	600

Horizontal filters

8	0	10	68.5	137	205.5	274.0	6	8	822
8	0	12	83.4	166.8	250.2	333.6	6	8	1000
8	0	14	98.2	196.4	294.6	392.8	6	8	1178
8	0	16	113.1	226.2	339.3	452.4	8	10	1357
8	0	20	142.7	285.4	428.1	570.8	8	10	1712
8	0	25	179.8	359.6	539.4	719.2	8	10	2157

Length is over-all length of filter, and area of bed is calculated for surface of bed 18 in. above center of shell.

Area of segments of the 2 dished heads = 9.2 sq. ft.

Area per lineal foot of bed in the cylinder = 7.42 sq. ft.

Example: 8x16 ft. filter—Area in heads = 9.2 sq. ft.

Area in cylinder, 14x7.42 = 103.9 sq. ft.

Total effective area = 113.1 sq. ft.

Construction of vertical steel pressure filters

DIAMETER	WORKING PRESSURE								
	65 lbs. per sq. in.			100 lbs. per sq. in.			125 lbs. per sq. in.		
	Shell		Head	Shell		Head	Shell		Head
	Min. joint eff.	Thick-ness	Thick-ness	Min. joint eff.	Thick-ness	Thick-ness	Min. joint eff.	Thick-ness	Thick-ness
<i>in.</i>	<i>per cent</i>	<i>in.</i>	<i>in.</i>	<i>per cent</i>	<i>in.</i>	<i>in.</i>	<i>per cent</i>	<i>in.</i>	<i>in.</i>
24	50	$\frac{3}{16}$	$\frac{1}{4}$	50	$\frac{3}{16}$	$\frac{1}{4}$	50	$\frac{1}{4}$	$\frac{5}{16}$
30	50	$\frac{3}{16}$	$\frac{1}{4}$	57	$\frac{1}{4}$	$\frac{5}{16}$	50	$\frac{5}{16}$	$\frac{5}{16}$
36	50	$\frac{3}{16}$	$\frac{1}{4}$	57	$\frac{1}{4}$	$\frac{5}{16}$	70	$\frac{1}{4}$	$\frac{3}{8}$
42	57	$\frac{1}{4}$	$\frac{5}{16}$	70	$\frac{1}{4}$	$\frac{3}{8}$	70	$\frac{5}{16}$	$\frac{7}{16}$
48	57	$\frac{1}{4}$	$\frac{5}{16}$	70	$\frac{1}{4}$	$\frac{3}{8}$	70	$\frac{5}{16}$	$\frac{7}{16}$
54	57	$\frac{1}{4}$	$\frac{5}{16}$	70	$\frac{5}{16}$	$\frac{7}{16}$	70	$\frac{3}{8}$	$\frac{1}{2}$
60	57	$\frac{1}{4}$	$\frac{3}{8}$	70	$\frac{5}{16}$	$\frac{7}{16}$	67	$\frac{7}{16}$	$\frac{1}{2}$
72	72	$\frac{1}{4}$	$\frac{3}{8}$	69	$\frac{3}{8}$	$\frac{1}{2}$	66	$\frac{1}{2}$	$\frac{11}{16}$
84	70	$\frac{5}{16}$	$\frac{7}{16}$	66	$\frac{1}{2}$	$\frac{9}{16}$	66	$\frac{9}{16}$	$\frac{11}{16}$
96	69	$\frac{3}{8}$	$\frac{7}{16}$	68	$\frac{1}{2}$	$\frac{5}{8}$	68	$\frac{5}{8}$	$\frac{3}{4}$

Standard manholes 11x15 in. or 10x16 in.

Tensile strength of steel plate 55,000 to 65,000 lbs. per sq. in.

Heads dished to radius of diameter of tank.

Hydrostatic test 50 per cent in excess of working pressure.

Construction of cast iron pressure filters

DIAMETER	WORKING PRESSURE			
	65 lbs. per sq. in.		100 lbs. per sq. in.	
	Shell thickness	Head and flange thickness	Shell thickness	Head and flange thickness
<i>in.</i>	<i>in.</i>	<i>in.</i>	<i>in.</i>	<i>in.</i>
12	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{5}{8}$	$\frac{7}{8}$
14	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{11}{16}$	$\frac{15}{16}$
16	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{11}{16}$	$\frac{15}{16}$
20	$\frac{11}{16}$	$\frac{15}{16}$	$\frac{3}{4}$	1
24	$\frac{11}{16}$	$\frac{15}{16}$	$\frac{13}{16}$	$1\frac{1}{16}$
30	$\frac{3}{4}$	1	$\frac{7}{8}$	$1\frac{1}{8}$
36	$1\frac{1}{16}$	$1\frac{1}{16}$	$1\frac{5}{16}$	$1\frac{3}{16}$
42	$1\frac{3}{16}$	$1\frac{7}{16}$	1	$1\frac{1}{4}$
48	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{16}$	$1\frac{5}{16}$

Filters to be gray iron castings having a tensile strength of approximately 20,000 lbs. per sq. in.

Hydrostatic test 50 per cent in excess of working pressure to be applied.

Heads dished to radius equal to diameter of shell may be modified with rib reinforcement to same thickness as shell.

Variations of $\frac{1}{8}$ in. in these thicknesses of shells and heads and flanges to be permissible.